POCKET COMPUTER NEWSLETTER

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THE SHARP PRINTER/CASSETTE INTERFACE

In early May, Sharp Electronics Corporation began marketing its new model CE-122 combination Printer/Cassette Interface for the PC-1211/Radio Shack TRS-80 Pocket Computer, in the United States (it had been available elsewhere earlier). It is a dandy little unit for its price of approximately $150.00.

The CE-122 combines a 16-column alphanumeric printer and an audio cassette interface in a single package measuring approximately 11 x 3-3/4 x 1-3/8 inches and weighing a little less than a pound, complete with built-in rechargeable ni-cad batteries.

The printer utilizes regular 1-3/4 inch wide rolls of paper and a tiny inked ribbon to produce characters in a dot-matrix fashion. The printer automatically indents and formats program listings stored in the pocket computer so that the up to 80-column lines are easily differentiated. Examples of actual print-outs will be provided by a number of program listings in future issues of *PCN*.

The cassette interface provides for recording programs and data from the pocket computer to an audio cassette or vice versa. A switch on the unit's console allows the operator to enable or disable the tape "remote" switch so that the remote control plug does not have to be unplugged in order to rewind a tape or place it in the fast-forward mode. This addition is a very nice convenience for those that frequently utilize a tape recorder with the pocket computer.

The Sharp PC-1211 or Radio Shack TRS-80 Pocket Computer mounts on and plugs into the printer/cassette interface in just the same manner as it does in the cassette interface that has been available for some time. A form of "hand-shaking" needs to be performed when using the printer so that the pocket computer knows how to output information.

To tell the PC that the printer is in use, the printer interface "power" switch and "printer on" switch are both placed in the "ON" position. Next, the power switch of the PC is depressed. When the PC has powered-up, its "ON" switch is depressed two more times. This process causes the computer to examine the status of the printer/cassette interface and determine that it is to route all PRINT statements to the printer unit. In this mode, only PAUSE statements will cause information to appear on the PC's display.

If the "printer on" switch is placed in the "OFF" position and the power switch of the PC is depressed twice again, the PC will switch back to outputting PRINT statements to the display of the PC unit.

The printer will also produce program listings – but only on an "all or nothing at all" basis. That is, you are not able to specify the printing of just a single program line or a group of lines. Only the full "LIST" command activates the printer when the PC is in the "program" mode, so a program must be listed in its entirety (unless you shut the unit off). From a practical viewpoint, this limitation isn't all that bad. Most users want a program listing in its entirety for documentation purposes. If you are just debugging, you can view single lines or groups of lines on the PC display.

The printer produces characters at the rate of about one line per second (16 characters per second). This is not lightning fast, but it is better than early teletype machines.

The unit is highly portable. It fits readily in even a thin-line briefcase. The rechargeable batteries will produce about 8,000 lines when fully charged, so you can carry it around for awhile before juicing it up again.

The CE-122 Printer/Cassette Interface is standardly supplied with three rolls of paper, a ribbon cartridge, an AC adapter for recharging its batteries, cassette connection cables, an instruction pamphlet and a carrying case. The paper and ribbon cartridges are used in other Sharp calculator products so they can often be obtained locally at office supply stores that may not actually be carrying the Sharp PC or CE-122.

Sharp appears to be marketing the PC-1211 and accessories such as the CE-122 in the U.S. primarily through selected computer stores, including the Computerland chain, plus college and university stores and a limited number of mail order houses. It will be interesting to see how this approach fares against the might of the 7,000 outlets of the Radio Shack network that originally introduced the PC under their TRS-80 brand name.

RADIO SHACK ANNOUNCES PRINTER

As this issue of *PCN* went to press, Radio Shack announced the availability of a printer/cassette interface for their popular TRS-80 Pocket Computer. The unit appears essentially identicle to the Sharp CE-122 unit and is retailing in Radio Shack Computer Centers and selected Radio Shack Stores at a price of $149.95. Radio Shack has also announced that they will be stocking paper and ribbons for the unit which should be a boon for CE-122 owners as well!

THIS MAY JUST BOGGLE YOUR MIND!

The following article and accompanying program was submitted by: *David G. Motto, 3639 Roosevelt, Jackson, MI 49203.*

I am a "Boggle-maniac." Many times during the course of a day, in my off-work moments, I am drawn to the little letters in the squares as a moth is drawn to . . . . Well, you know the expression. My main problem is that I am afraid. Call me silly, but I do not want the world to know of my obsession.

Unfortunately, the makers of *Boggle* seem to be indifferent to my forlorn circumstances. They continue to manufacture their superb game with what I see as a perverse attempt to provide sound and motion to the game. Really, rattling those cubes around in that container sets my teeth on edge!

For those of you who have not played the game, here is a brief description of it. You have a translucent cube that can hold 16 dice. On each side of a die there is a letter of the alphabet (the side with a 'q' also contains a small 'u'). You rattle the cube in order to "randomize" the dice. When you stop shaking the cube, the dice fall into square depressions in the cube, leaving the top face of each die exposed. Next you turn over an egg timer, examine the array of exposed letters, and race to form words.

The way you form words is to start at any letter on a die and travel to an adjacent letter. You can move across, up or down, and diagonally. You write down the letters as you go. But, you cannot back-track to the same letter in a word. You may, however, re-use letters again when you form other words.

So, you hop around the cube writing down words. The longer a word, the more it counts. This process continues until the timer runs out.

(Seeing all this put down in print makes me wonder what all the fuss is about?)

So, let us go to the program that I have named *Word Squares*.

Line 1 is the introductory line. It is useful if you forget to place your PC in the DEF mode and press SHIFT and then the SPACE key.

Line 2 is the random number generator. It is concise and fairly reliable.

Lines 3 through 28 contain the letters of the alphabet. The order used will be explained shortly.

Line 29 is used to clear all variables and to input a fractional "seed" to the random number generator.

Line 30 sets up the constants for the letters. These constants are related to the frequency with which letters typically appear in the English language. I dug the figures out of a table in a book by Fletch Pratt entitled *Codes and Secret Writing*. The table showed that the letter E occurs 13.108 percent of the time, the leter T 10.471 percent. The letters A, O, N, R, I and S make up the next 42.525 percent, etc.

I used these figures to build up my table. Each number in registers T through Y contain the probabilities in the integer portion and the range in the fraction portion.

Line 31 accepts the size of the square, anything from 1 by 1 to 10 by 10. Use something around 6 to keep the run time short.

Program *Word Squares*

```
1:" "GOTO 29
2:Z=9821Z+.211
  327:Z=Z-INT
  Z:RETURN
3:A$(P)="E":
  RETURN
4:A$(P)="T":
  RETURN
5:A$(P)="A":
  RETURN
6:A$(P)="O":
  RETURN
7:A$(P)="N":
  RETURN
8:A$(P)="R":
  RETURN
9:A$(P)="I":
  RETURN
10:A$(P)="S":
  RETURN
11:A$(P)="H":
  RETURN
12:A$(P)="D":
  RETURN
13:A$(P)="L":
  RETURN
14:A$(P)="F":
  RETURN
15:A$(P)="C":
  RETURN
16:A$(P)="M":
  RETURN
17:A$(P)="U":
  RETURN
18:A$(P)="G":
  RETURN
19:A$(P)="Y":
  RETURN
20:A$(P)="P":
  RETURN
21:A$(P)="W":
  RETURN
22:A$(P)="B":
  RETURN
23:A$(P)="V":
  RETURN
24:A$(P)="K":
  RETURN
25:A$(P)="X":
  RETURN
26:A$(P)="J":
  RETURN
27:A$(P)="Q":
  RETURN
28:A$(P)="Z":
  RETURN
29:CLEAR :INPUT
  "SEED? ";Z
30:T=13108:U=23
  579.01:V=661
  04.026:W=731
  66.08:X=8923
  3.096:Y=9816
  3.155
31:INPUT "SIZE?
   ";S
32:FOR Q=1TO S
33:FOR P=1TO S
34:GOSUB 2
35:Q=E5Z:L=20.6
36:FOR M=2OTO 2
  5:IF Q<A(M)
  LET L=E2*(A(
  M)-INT A(M))
  :M=25
37:NEXT M
38:GOSUB 2:L=
  INT L+E1Z*(L
  -INT L)
39:GOSUB 3+L
40:NEXT P
41:BEEP 1:PRINT
  A$;B$;C$;D$;
  E$;F$;G$;H$;
  I$;J$:NEXT Q
42:GOTO 31
```

Lines 32 and 33 set up a nested loop to print the square.

Line 34 obtains the first random number, which is less than 1.

Line 35 scales that number so that it can be compared to the table set up in line 30. It also sets up a default value for variable L.

Lines 36 and 37 make up a FOR–NEXT loop which finds a value for L based on the random number. This value is further modified in line 38 by another random number. The third digit of the fractional part tells which letter of a group of letters is chosen. Finally, line 39 selects the actual letter.

Line 40 is the end of the internal loop.

Line 41 tells the user to look at the display and write down the line of letters shown there.

This program shows, I believe, that the string handling capabilities of the Radio Shack TRS-80 PC are perhaps not as bad as you may have thought!

PRODUCT REVIEW
BUSINESS STATISTICS AND MARKETING PACKAGE

Produced by: *Radio Shack for the TRS-80 Pocket Computer.*
List price: *$19.95*
Availability: *Radio Shack Computer Centers and selected Radio Shack stores.*
Reviewer: *Allan McCroskery, 327 Main Avenue, Norwalk, CT 06851.*

The Radio Shack *Business Statistics and Marketing* package consists of programs that perform relatively sophisticated statistical analysis, with the exception of the "Management Decisions" routines which most retailers would consider standard formulas. Reviewer *Allan McCroskery* reports he had to purchase a college study guide to bone up on what the various programs were actually accomplishing!

The package contains the following programs:

Forecasting – you can input up to 100 values taken over selected intervals of time. The program then makes projected data values, provides the coefficients of the trend line equation (based on the values entered) and an estimate of the standard error value.

Seasonal Variation – You can input up to two years of monthly data (or eight quarters) and this program will compute the seasonal indexes based on the ratio-to-centered-moving-average technique.

Moving Average – Up to 60 data values can be averaged.

Normal/t/F/Distributions – This program computes normal, t, and F functions using standard approximation formulas. If you provide a mean, standard deviation and X value, the program will output the Z score, f(X), cumulative percentile, and the area under the normal curve between X and the mean. You can enter new X values without entering new mean and standard deviation figures. The program can also determine one- and two-tail probabilities for the t distribution after it has been inputted a t value and the degrees of freedom have been specified. Finally, given an F-ratio and degrees of freedom in the numerator and denominator, it can provide the right-tail probability.

Descriptive Statistics – You can feed this program up to 80 data values, grouped or ungrouped. The program can then provide information on sample size, mean, median, mode, sum, sum of squares, standard deviation, and variance.

Multiple Regression – This program uses the least squares method for fitting a straight line to produce regression statistics.

Gompertz Curve Analysis – Up to 90 data values are fit to to the Gompertz growth curve. The program also provides an unbiased estimate of the standard error of estimate and produces the constants log a, log b and log c for the curves equation: $\log y = \log a + (\log b)c^x$.

Management Decisions – This program is really a whole package of smaller programs that all reside in the PC at the same time. It may well be the most generally useful program in the package for many purchasers. It includes routines to perform the following computations:

Break-Even Analysis
Optimum Order Quantity
Make versus Buy
Profit Margin
Markup
Price Elasticity
Manufacturing Cost Curve
Random Sample

The routines use common business formulas to solve the problems in straightforward fashion. What is nice here is that many of the calculations and retailer or wholesaler frequently has to make during a business day are all available in the PC at one time.

Allan reports that all the programs in the package loaded and operated as described in the 30-page booklet that is provided with the cassettes. His only complaint had to do with the fact that some of the programs require you to be very careful when entering data or you are liable to lose your place. The reason this can happen is because the programs typically just flash the important information, such as "ENTER VALUE # 2" and then leave just the question mark "?" on the display. A program such as the *Gompertz Curve Analysis* can have you entering up to three "data sets" with four values in each set. If you don't concentrate and watch the display carefully, you can get fouled up and have to start all over.

Generally, however, Allan rates the package with approval, adding that even if you cannot use all the programs you may benefit from a study of the programming methods utilized.

MORE INTERFACING INFORMATION

In Issue 04 of *PCN* we asked if any readers knew the functions of pins 1 – 5 of the Radio Shack TRS-80 PC. While several readers wrote to say that they believed they were for the use of a printer or similar device, which we had certainly surmised, *Ken Slaughter, 2916 Bangor Avenue, Highland, CA 92346,* was the first to send in pin-specific data which he indicates he obtained from PC service manuals! Now, if he will just tell us where we can buy those manuals?! In any event, here is the scoop he provided. The pin order is as described in the earlier *PCN* article.

Pin #	In/Out	Description
1	Out	Data to printer
2	In	Printer Busy
3	In	Printer Identification
4	Out	Computer Busy
5	–	Ground (Common)

OPERATING TIP

When you first go into the PRO mode on a Radio Shack TRS-80 or Sharp PC-1211 PC you can get access to statements in memory without entering the command LIST. If you want to look at the highest line number, press the "scroll up" key. If you want to look at the lowest line number, press the "scroll down" key. Once the initial line has been displayed you may use the scroll keys in conventional fashion to reach the line(s) of interest.

PROGRAM MEMORY ADDRESSES

Norlin Rober, who has provided material for *PCN* previously, recently sent in a package containing an incredible wealth of information concerning the layout and use of memory in the Radio Shack TRS-80/Sharp PC-1211 Pocket Computers. Norlin is proving himself to be a "software sleuth" par-excellent. All of the information he is providing has been gleaned by patient analysis of the results from countless hours of creative operation of his pocket computer. This issue he provides the following information regarding program memory addresses.

A three-digit hexadecimal address may be used to represent a count of the number of hexadecimal digits (which is exactly twice the number of bytes) that can be stored starting at the beginning of memory. Each memory address shown in the accompanying table is the location of the start of a block of 16 hexadecimal digits (stored in 8 bytes of memory). Each column of addresses in the table represents the storage space in one of three 512-byte RAM (Random Access Memory) chips in the pocket computer that are used for program storage.

Table *Program Memory Addresses*

	000	RESERVE	400	A(146)	800	A(82)	
	010	RESERVE	410	A(145)	810	A(81)	
	020	RESERVE	420	A(144)	820	A(80)	
	030	RESERVE	430	A(143)	830	A(79)	
	040	RESERVE	440	A(142)	840	A(78)	
	050	RESERVE	450	A(141)	850	A(77)	
Usable for Program	060	A(204)	460	A(140)	860	A(76)	
	070	A(203)	470	A(139)	870	A(75)	
	080	A(202)	480	A(138)	880	A(74)	
	090	A(201)	490	A(137)	890	A(73)	
	0A0	A(200)	4A0	A(136)	8A0	A(72)	
	0B0	A(199)	4B0	A(135)	8B0	A(71)	
	0C0	A(198)	4C0	A(134)	8C0	A(70)	
	0D0	A(197)	4D0	A(133)	8D0	A(69)	
	0E0	A(196)	4E0	A(132)	8E0	A(68)	
	0F0	A(195)	4F0	A(131)	8F0	A(67)	
	100	A(194)	500	A(130)	900	A(66)	
	110	A(193)	510	A(129)	910	A(65)	
	120	A(192)	520	A(128)	920	A(64)	
	130	A(191)	530	A(127)	930	A(63)	
	140	A(190)	540	A(126)	940	A(62)	
	150	A(189)	550	A(125)	950	A(61)	
	160	A(188)	560	A(124)	960	A(60)	
	170	A(187)	570	A(123)	970	A(59)	
	180	A(186)	580	A(122)	980	A(58)	
	190	A(185)	590	A(121)	990	A(57)	
	1A0	A(184)	5A0	A(120)	9A0	A(56)	
	1B0	A(183)	5B0	A(119)	9B0	A(55)	
	1C0	A(182)	5C0	A(118)	9C0	A(54)	
	1D0	A(181)	5D0	A(117)	9D0	A(53)	
	1E0	A(180)	5E0	A(116)	9E0	A(52)	
	1F0	A(179)	5F0	A(115)	9F0	A(51)	
	200	A(178)	600	A(114)	A00	A(50)	
	210	A(177)	610	A(113)	A10	A(49)	
	220	A(176)	620	A(112)	A20	A(48)	
	230	A(175)	630	A(111)	A30	A(47)	
	240	A(174)	640	A(110)	A40	A(46)	
	250	A(173)	650	A(109)	A50	A(45)	
	260	A(172)	660	A(108)	A60	A(44)	
	270	A(171)	670	A(107)	A70	A(43)	
	280	A(170)	680	A(106)	A80	A(42)	
	290	A(169)	690	A(105)	A90	A(41)	
	2A0	A(168)	6A0	A(104)	AA0	A(40)	
	2B0	A(167)	6B0	A(103)	AB0	A(39)	
	2C0	A(166)	6C0	A(102)	AC0	A(38)	
	2D0	A(165)	6D0	A(101)	AD0	A(37)	
	2E0	A(164)	6E0	A(100)	AE0	A(36)	
	2F0	A(163)	6F0	A(99)	AF0	A(35)	
	300	A(162)	700	A(98)	B00	A(34)	
	310	A(161)	710	A(97)	B10	A(33)	
	320	A(160)	720	A(96)	B20	A(32)	
	330	A(159)	730	A(95)	B30	A(31)	
	340	A(158)	740	A(94)	B40	A(30)	
	350	A(157)	750	A(93)	B50	A(29)	
	360	A(156)	760	A(92)	B60	A(28)	
	370	A(155)	770	A(91)	B70	A(27)	
	380	A(154)	780	A(90)	B80	A(26)	Z
	390	A(153)	790	A(89)	B90	A(25)	Y
	3A0	A(152)	7A0	A(88)	BA0	A(24)	X
	3B0	A(151)	7B0	A(87)	BE0	A(23)	W
	3C0	A(150)	7C0	A(86)	BC0	1st Loop/Subr	
	3D0	A(149)	7D0	A(85)	BD0	2nd Loop/Subr	
	3E0	A(148)	7E0	A(84)	BE0	3rd Loop/Subr	
	3F0	A(147)	7F0	A(83)	BF0	4th Loop/Subr	

Addresses 000 through 05F are used as REServe memory only. Addresses 060 to B7F may be used for program storage or for array variables in the positions tabulated. Addresses B80 through BBF hold the fixed variables A(23) through A(26), i.e., the variables named W, X, Y and Z. The registers used to store FOR/NEXT loop information and subroutine return addresses are designated BC0 through BFF.

A "pointer" register (located elsewhere in memory) holds the address of the first unused program byte. It is used to prevent storage or recall of array variables whose addresses are occupied by a program. When program lines are added or deleted, the contents of this pointer register are modified appropriately.

Thanks to: *Norlin Rober, 407 North 1st Avenue, Marshalltown, IA 50158*

VEGAS CRAPS

This is the game of *Craps* designed for a single player. It allows most "right way" or so-called "bet to pass" options, with the exception of the "coming out" bet. A description of the various acceptable bets follows.

Pass Bet — This is the initial bet of any amount that lets the player in a game. The bet is won if the initial roll of the dice is 7 or 11. The bet is lost if the initial roll is a 2, 3 or 12 ("craps"). Any other number becomes known as the "point number" — this is the number the player will be shooting for on subsequent rolls of the dice. This number must be made before a 7 is rolled in order to win the bet.

Free Odds Bet — A bet of any amount up to the original amount of the initial "pass bet" may be made. Its name is derived from the fact that it is the only bet that gets even odds from a casino.

Field Bet — A bet of any amount that is won if a 2, 3, 4, 9, 10, 11 or 12 is rolled on the next toss of the dice. A 2 or 12 pays double money, the remaining "field" numbers pay even money. The bet is lost if a 5, 6, 7 or 8 is rolled.

Big 6 — A poor percentage bet that the number 6 will be rolled before a 7 out.

Big 8 — A similar bet for the number 8.

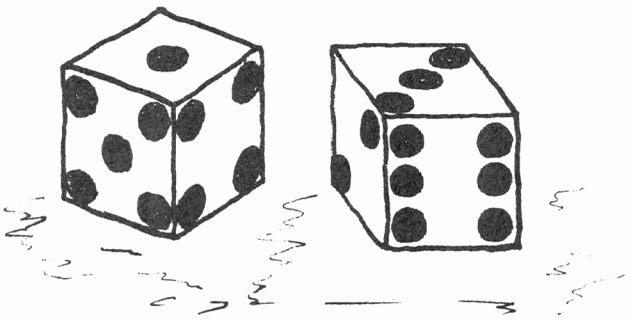
Bet the Hard Way — Any amount may be bet that any or all of the four possible "hard way" bets (4, 6, 8 or 10). The "hard way" bet is that the number will be rolled the hardest way — by rolling doubles — before the number is rolled some other way or the player rolls a 7. Pay offs for the hard way bets are listed in parentheses in the program.

Place to Win — A bet of any amount that the number selected (which may be a 4, 5, 6, 8, 9 or 10) will be rolled before a 7 comes up.

Have fun rolling your electronic dice!

This version of *Vegas Craps* was submitted by; *Gary Heidbrink, Box 24, FPO New York, NY 09593*

```
 5:"V":Y=3254:
   INPUT "RND#=
   ";Y
10:FOR V=1TO 18
   :A(V)=0:NEXT
   V:PRINT "
      VEGAS CRA
   PS"
15:IF P>0GOTO 3
   5
20:INPUT "BET O
   R QUIT? (B/Q
   ):";Z$:IF Z$
   ="Q"GOTO 280
25:INPUT "PASS
   BET:";A:Q=A:
   GOTO 120
30:GOTO 20
35:INPUT "CHANG
   ING BETS? (Y
   /N):";Z$:IF
   Z$="N"GOTO 1
   20
40:INPUT "FREE
   ODDS BET:";B
   :IF B>ALET B
   =A
45:INPUT "FIELD
    BET:";C
50:INPUT "BIG 6
   :";D
55:INPUT "BIG 8
   :";E
60:INPUT "BET T
   HE HARDWAY?
   (Y/N):";Z$:
   IF Z$="N"
   GOTO 85
65:INPUT "4 (7/
   1):";F
70:INPUT "6 (9/
   1):";G
75:INPUT "8 (9/
   1):";H
80:INPUT "10 (7
   /1):";I
85:INPUT "PLACE
    TO WIN? (Y/
   N):";Z$:IF Z
   $="N"GOTO 12
   0
90:INPUT "4 (9/
   5):";J
95:INPUT "5 (7/
   5):";K
100:INPUT "6 (7/
   6):";L
105:INPUT "8 (7/
   6):";M
110:INPUT "9 (7/
   5):";N
115:INPUT "10 (9
   /5):";O
120:PAUSE " DICE
    ARE BEING R
   OLLED"
125:GOSUB 290:T=
   W:GOSUB 290:
   U=W:S=T+U
130:PRINT " DICE
    ARE: ";T;"A
   ND ";U
135:IF P>0GOTO 1
   70
140:IF S=7LET Q=
   Q+A:FOR V=1
   TO 15:Q=Q-A(
   V):A(V)=0:
   NEXT V:GOTO
   240
145:IF S=11GOTO
   245
150:IF S=2GOTO 2
   50
155:IF S=3GOTO 2
   50
```



```
160:IF S=12GOTO
   290
165:P=13:PRINT "
   POINT $ IS:
   ";S:Q=0
170:IF T=UGOSUB
   255
175:IF S=2LET Q=
   Q+C*2
180:IF S=3LET Q=
   Q+C
185:IF S=4LET Q=
   Q-F+C+INT (J
   *9/5):F=0:J=
   0:IF P=5LET
   Q=Q+B*2
190:IF S=5LET Q=
   Q-C+INT (K*7
   /5):K=0:IF P
   =5LET Q=Q+
   INT (B*3/2)
195:IF S=6LET Q=
   Q-C-G+D+INT
   (L*7/6):D=0:
   G=0:L=0:IF P
   =5LET Q=Q+
   INT (B*6/5)
200:IF S=7FOR V=
   1TO 15:Q=Q-A
   (V):A(V)=0:
   NEXT V:P=0
205:IF S=8LET Q=
   Q-C-H+E+INT
   (M*7/6):E=0:
   H=0:M=0:IF P
   =8LET Q=Q+
   INT (B*6/5)
210:IF S=9LET Q=
   Q+C+INT (N*7
   /5):N=0:IF P
   =8LET Q=Q+
   INT (B*3/2)
215:IF S=10LET Q
   =Q-I+C+INT (
   O*9/5):I=0:O
   =0:IF P=8LET
   Q=Q+B*2
220:IF S=11LET Q
   =Q+C
225:IF S=12LET Q
   =Q+C*2
230:C=0:IF S=P
   LET Q=Q+A:P=
   0
235:IF P=13LET P
   =S
240:IF Q<0LET Q=
   -Q:GOTO 250
245:R=R+Q:PRINT
   "YOU WIN $";
   Q:Q=0:GOTO 1
   5
250:R=R-Q:PRINT
   "YOU LOSE $"
   ;Q:Q=0:GOTO
   15
255:IF S=4LET Q=
   Q+F*7:F=0
260:IF S=6LET Q=
   Q+G*9:G=0
265:IF S=8LET Q=
   Q+H*9:H=0
270:IF S=10LET Q
   =Q+I*7:I=0
275:RETURN
280:IF R<0LET R=
   -R:PRINT "YO
   U LOST $";R:
   GOTO 10
285:PRINT "YOU W
   ON $";R:GOTO
   10
290:Y=439147*Y+R
   :Y=23*Y-INT
   (Y*.23)*100:
   W=INT (Y*.06
   )+1:RETURN
```

OOPS!

Line 10 of the payroll program in Issue 05, page 2, of *PCN* should end with the statement H=100. A typsetting error resulted in it reading H=E2, meaning the value 1 raised to the exponent 2. Sorry for the confusion that resulted when many readers took it to mean the variable E multiplied by 2.

OOPS, AGAIN!

The Tic-Tac-Toe game in Issue 05, page 5, of *PCN* contains a programming bug. Thanks go to *Robert Hatch, of Fort Sam Houston, Texas,* for being the first to report the bug to the program author. Author *Norlin Rober* quickly sent in the following patch to clean things up:

In line 22: Replace Y=A-4 by Y=14-A

In line 23: Replace Y=6-X by Y=6-B

Chances are many readers never detected the bug as it only showed up if the player made the moves 5349, 5672, 5729, 5834 or 5943. If you never played a game with those moves you would never know the program had a flaw.

INTERFACE YOUR PC TO A BIGGER COMPUTER!

A number of readers have inquired as to whether there is some type of device available that would allow a pocket computer to transfer data to a larger machine. The June, 1981 issue of *80 Microcomputing* (page 18) reports that an enterprising chap in West Germany has developed such an interface. It reportedly enables a PC to be hooked up to a regular disk-based Radio Shack TRS-80. The regular TRS-80 can then be used to transfer data or programs to the pocket computer. It is anticipated that programs that allow transfers in the reverse direction (PC to regular computer) will soon be available. For more information on this device, write to the developer: Reinhard Wiesemann, Winchenbachstr. 3a, D-5600 Wuppertal 2, West Germany.

OPERATING TIP

Ever been in the calculating mode , entered a long series of numbers in a complicated formula, hit the ENTER key, and get a result that doesn't make sense? You figure maybe you made an error in entry. So, you get ready to re-enter the whole darn formula again. *Wait!* On a TRS-80 or PC-1211 PC, all you have to do is press the forward or back cursor arrow key. Presto! The figures used in the calculation will be back up on the display. Use the same cursor control keys to review and edit the data as necessary. When you want to try for the answer again, press the ENTER key. You can do this as often as it takes to get the answer that satisfies *you.*

TRIP EXPENSES

The accompanying program is designed to keep track of various expenses during an automobile trip. It will tally such parameters as your average miles per gallon for an entire trip, the mpg for each tank, the highest and lowest mpg per tank, total trip mileage, gasoline and oil expenses, and expenses in other categories.

Here is a summary of the expense categories incorporated into the program.

GAS – Gasoline. A sub-account tallies oil usage.
MEAL – Food at regular meals.
SNACK – Records those between meals expenses.
ROOM – Lodging costs.
FUN – Another word for this is entertainment.
MISC – Expenses in all other areas.

The program should be executed in the DEF mode. There are four program labels used to enter various parts of the program. SHIFT N is used at the start of a new trip. This entry point clears all memories. SHIFT C is used to continue making entries during a trip. Use SHIFT = to call up current totals. SHIFT L may be used to recall the current high and low mpg figures.

Ready to take a trip? Fill up your gas tank, then press SHIFT N. Enter your starting mileage. If there are no expenses at this point, just turn the PC off. (Remember, you do not enter the cost of the initial tank of gas. However, to get an accurate record of a trip, you should always top your tank off at the conclusion of a trip and include that expense as part of the trip!)

Anytime you need to make an entry during a trip, just turn the PC back on and enter SHIFT C. When the message ENTER EXPENSE NAME appears, enter the appropriate category, such as GAS, MEAL, ROOM, etc. Answer the questions that are then provided by the program.

For example, if you entered GAS as an expense name, the program will ask you for the present mileage, the number of gallons purchased, the price, and whether or not you also bought oil. If you did, you will also enter its cost. When you are through making entries, just shut the PC off again.

When you want to examine totals to date, use the SHIFT = key. Incidently, you should run totals (by using the SHIFT = key) between gas purchases. Otherwise, you might miss a new low or high mpg per tank record. If you ask for totals and have not purchased gas yet, the trip mpg figure will not appear.

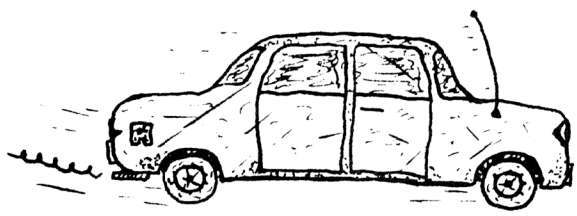
The program leaves only 13 steps of storage left. You are likely to run out of memory if you try to add much. I have tried to eliminate operator caused errors. If I have missed any, please let me know along with your thoughts on correcting the problem. The program could be compacted using the kinds of techniques that Norlin Rober mentioned in Issue 04 of *PCN.* Feel free to modify it as you see fit. This is the version I am using!

Submitted by: *Jack Forbes, 812 Bray Avenue, Rolla, MO 65401*

```
 5:"N"PAUSE "
      TRIP EXPE
   NSES":PAUSE
   "      BY JAC
   K FORBES"
10:BEEP 1:PAUSE
   "  START WIT
   H FULL TANK"
   :CLEAR :
   INPUT "ENTER
    STARTING MI
   LEAGE ";K:G=
   K
15:"C"INPUT " E
   NTER EXPENSE
    NAME ";A$:
   GOTO A$
20:"GAS"INPUT "
   ENTER PRESEN
   T MILEAGE ";
   F;"HOW MANY
   GALLONS ";D:
   C=C+D:IF D=0
   THEN 60
25:INPUT "WHAT
   WAS THE COST
    $";B:E=E+B:
   INPUT "DID Y
   OU BUY OIL Y
   /N? ";A$:IF
   A$="N"THEN 6
   0
30:INPUT "   HO
   W MANY QUART
   S? ";B:L=B+L
   :INPUT "   C
   OST OF OIL $
   ";B:Q=B+Q:
   GOTO 60
35:"MEAL"INPUT
   "ENTER COST
   OF MEAL $";B
   :O=B+O:GOTO
   60
40:"FUN"INPUT "
    ENTER FUN C
   OST $";B:M=B
   +M:GOTO 60
45:"MISC"INPUT
   " ENTER MISC
    COST $";B:N
   =B+N:GOTO 60
50:"ROOM"INPUT
   " ENTER ROOM
    COST $";B:R
   =B+R:GOTO 60
55:"SNACK"INPUT
   " ENTER SNAC
   K COST $";B:
   P=B+P
60:INPUT "ARE T
   OTALS WANTED
    Y/N?";A$:IF
   A$="N"THEN 1
   5
65:"="I=F-K:IF
   I<=0THEN 75
70:PRINT " TOTA
   L TRIP MILES
    ";I
75:IF (D=0)+(C=
   0)THEN 125
80:B=I/C:PRINT
   " GRAND TOTA
   L MPG= ";B:H
   =F-G:B=H/D:
   IF B<=0THEN
   125
85:G=F:PRINT "T
   RIP MILES PE
   R GAL ";B:IF
   S<>0GOTO 95
90:S=B:T=B
95:IF B<SGOTO 1
   10
100:IF B>TGOTO 1
   15
105:GOTO 120
110:BEEP 2:S=B:
   PRINT " NEW
   LOW MPG":
   GOTO 120
115:BEEP 2:T=B:
   PRINT " NEW
   HIGH MPG":
   GOTO 120
120:"L"U=INT (S*
   100)/100:
   PRINT "LO MP
   G= ";U;" HI=
    ";T
125:IF C=0THEN 1
   35
130:PRINT " GAS
   TOTAL IS ";C
   ;" GALS"
135:IF E=0THEN 1
   45
140:PRINT " TOTA
   L GAS COST $
   ";E
145:IF L=0THEN 1
   55
150:PRINT " TOTA
   L OIL USED "
   ;L;" QTS"
155:IF Q=0THEN 1
   65
160:PRINT " TOTA
   L OIL COST $
   ";Q
165:IF O=0THEN 1
   75
170:PRINT " TOTA
   L MEALS COST
    $";O
175:IF P=0THEN 1
   85
180:PRINT " TOTA
   L SNACK COST
    $";P
185:IF M=0THEN 1
   95
190:PRINT " TOTA
   L FUN COST $
   ";M
195:IF N=0THEN 2
   05
200:PRINT " TOTA
   L MISC COST
   $";N
205:IF R=0THEN 2
   15
210:PRINT " TOTA
   L ROOM COST
   $";R
215:B=E+Q+O+R+N+
   M+P:IF B=0
   THEN 225
220:PRINT " TOTA
   L TRIP COST
   $";B
225:IF I<=0THEN
   240
230:J=B/I:IF J=0
   THEN 240
235:J=INT (J*100
   0)/1000:
   PRINT " *COS
   T PER MILE*
   $";J
240:PRINT "    T
   OTALS COMPLE
   TED":GOTO 15
```

Variables Usage

A	String input
B	Variable input
C	Total gallons
D	Amount of gallons
E	Total gas costs
F	Present mileage
G	Starting mileage
H	Total trip miles
I	Trip mileage
J	Cost per mile
K	Starting mileage
L	Total quarts of oil
M	Total FUN costs
N	Total MISC costs
O	Total MEAL costs
P	Total SNACK costs
Q	Total OIL costs
R	Total ROOM costs
S	Low mpg figure
T	High mpg figure
U	Integer of S



FROM THE WATCH POCKET

Industry wags say Radio Shack has sold over 100,000 units of the TRS-80 Pocket Computer. R.S. dropped their price on the PC during the month of May from $249.00 to $199.00, maybe by pure coincidence, but this was the month in which Sharp Electronics chose to announce it was introducing its PC-1211 to the U.S. market at a list price of $249.00. After the May sale Radio Shack lifted the price up to $229.00.

The CE-122 combination printer/cassette interface appears to be receiving a warm welcome in the U.S., with comments generally favorable. The unit operates with either the Sharp PC-1211 or R.S. TRS-80 PC. Right now Sharp has the market for this peripheral all to themselves. However, Radio Shack is introducing an identical-performance printer to the U.S. market in early July at a competitive price ($149.95) and will also stock paper and ribbons for the unit.

Reliable sources indicate that the Panasonic/Quasar HHC is finally getting ready to hit the market, possibly as early as August/September. Production units are reportedly being placed in the hands of prospective distributors and large purchasers for their review at this time.

The Panasonic RL-H1000, whose design was licensed by *Friends Amis, Inc., 505 Beach Street, San Francisco, CA 94133,* has apparently been expanded in capability during recent months. The basic unit is now reported to have 8K-bytes of memory, to be capable of operating as both a stand-alone computer and a communications terminal, and to be supported with a variety of software packages. Add on units include a modem, mini-printer, ROM and RAM elements, and a video generator. Software packages include "spreadsheet" type programs, numerous business packages, operating systems that tailor the HHC to an application, and several languages.

The price of the basic HHC will apparently be about $500 with a typical small system for a particular application being in the $1000 — $1500 range. All of this sounds exciting. Let's hope it all turns out to be true.

Another outfit that is specializing in PC programs is *Blanton Software Service, 4522 Briar Forrest, San Antonio, TX 78217.* They have programs such as an Appointment Calendar, Timer/Clock, Electronic Checkbook, Blackjack, a Personal/Business Expense ledger and others. I have taken a quick look at several of the programs and accompanying documentation and was favorably impressed. We expect to present reviews of several of the packages in coming issues of *PCN.* In the meantime, if you want to take a look at what they have, write to *them* for a catalog.

Meanwhile, an outfit mentioned in this column in the last issue, *Sebree's Computing,* did not receive a favorable review from our frequent games contributor *Gary Heidbrink.* He slapped a rating of about 2 (out of 10) on the package citing poor programming technique, such as an incomplete FOR—NEXT loop, as one of the reasons the program did not meet with his approval.

Electronic engineers and technicians are likely to appreciate a program for the Radio Shack and Sharp PCs that calculates LC resonance. Such a program is presented and described in the June 16, 1981, issue of *Electronics* on page 189. The program evaluates a resonant circuit having a lossless, single-layer airwound coil and a capacitor. Check it out if you are into that kind of design work.

Scott U. Johnson, in the June, 1981, issue of *Kilobaud Microcomputing,* responding to an earlier article of mine, mentioned an interesting comparison of the Sharp PC-1211 versus the Texas Instrument's TI-59 and Hewlett-Packard's HP-41C calculators. A bond yield formula was used as a benchmark. The HP-41C solved the test problem in 37 seconds, the TI-59 in 43 seconds and the PC-1211 in 51 seconds. But the problem only consumed 5.8% of the PC-1211's memory while it ate up 10.3% of the TI-59's and 15.6% of the HP-41C's storage. I'l take the convenience of the PC's BASIC over the almost machine language programming requirements of the other two units and live with the slightly lower execution time for the great majority of my applications. I really think the PC's showing is impressive when you consider it was up against two units one can assume were designed as streamlined number crunchers!

I still would like to see a faster method of loading programs into the PC. It is disconcerting, having the portability of the basic unit, to have to lug around a separate tape recorder and cassette tapes. Wouldn't it be nice if there were something, say about the size of the CE-122, that could read and write magnetic strips? Such strips could easily be carried in a jacket pocket or maybe even slipped inside the carrying case of the PC. The technology for storing the 1.4 kilobytes of memory used in the PC is certainly present today. Make the carrying around of supplementary programs more convenient, reduce the program/data loading time to a matter of seconds instead of minutes, and the PC will become a much more attractive unit to many prospective customers. — *Nat Wadsworth, Editor*

SHARE YOUR POCKET COMPUTER KNOWLEDGE

We are always interested in hearing about applications for pocket computers, new products and news of the industry. Do you know of any operating time-savers, programming tips, short cuts or technical information that might be of interest to others? Have you developed application programs that you would like to share with fellow pocket computer enthusiasts? Have you had experience with PC products or programs that others might find of value?

If so, write it up! If your submission is accepted for publication you will earn a cash reward as well as have the satisfaction of knowing you are helping other PC users.

We prefer that program listings be supplied on audio cassette tape so that they may be easily reviewed. We can also then make listings of accepted programs directly from the tape to avoid transcription errors. If we cannot use your material, we will endeavor to promptly return it *provided you include a self-addressed stamped envelope for that purpose.* We are careful, but we cannot assume responsibility for submitted materials.

Submissions should be addressed to: The Editor, PC NEWSLETTER, PO Box 232, Seymour, CT 06483